CLAIMS

1. An uneven display correction method, characterized by including:

a first step of dividing a display area of a display panel into a plurality of unit areas, the first step setting one arbitrary unit area among the unit areas at a reference area, the first step previously determining a value as a correction parameter in each unit area, the value corresponding to a difference between a light-emission start gradation level of the unit area and the light-emission start gradation level of the reference area; and

a second step of correcting an input video signal based on the correction parameter determined in each unit area.

2. An uneven display correction method according to claim 1, characterized in that the first step includes:

an a step of dividing a display area of a display panel into a plurality of unit areas;

a b step of measuring brightness of each unit area in one predetermined gradation level;

a c step of determining a light-emission efficiency characteristic in an arbitrary unit area; and

a d step of computing the value as the correction parameter in each unit area by setting one arbitrary unit area among the unit areas at the reference area based on the brightness measured in each unit area in the b step and the light-emission efficiency characteristic determined in the c step, the value corresponding to the difference between the light-emission start

gradation level of the unit area and the light-emission start gradation level of the reference area.

3. An uneven display correction method according to claim 2, characterized in that the brightness of each unit area is measured with a surface brightness measuring apparatus in the b step.

4. An uneven display correction method according to claim 2, characterized in that the brightness of each unit area is measured by measuring current passing through the display panel in the b step.

5. An uneven display correction method according to claims 1 or 2, characterized in that each unit area is an area of one pixel unit.

6. An uneven display correction method according to claims 1 or 2, characterized in that each unit area is an area having a predetermined size including a plurality of pixels.

7. An uneven display correction method according to claim 6, characterized in that each unit area is a divided area which is obtained by dividing the display area of the display panel into a plurality of display areas in a laser annealing position moving direction during a display panel producing process.

8. An uneven display correction method according to claim 6,

characterized in that each unit area is a divided area which is obtained by dividing the display area of the display panel into the plurality of display areas in a direction orthogonal to the laser annealing position moving direction while dividing the display area of the display panel into the plurality of display areas in the laser annealing position moving direction during the display panel producing process.

9. An uneven display correction method according to claim 5, characterized in that the second step corrects the input video signal based on the correction parameter according to a pixel position of the input video signal.

10. An uneven display correction method as in any one of claims 6 to 8, characterized in that the second step includes:

a step of determining the correction parameter according to the pixel position of the input video signal by performing second-order linear interpolation on the correction parameters of four unit areas near the pixel position of the input video signal; and

a step of correcting the input video signal based on the correction parameter according to the pixel position of the input video signal.

11. An uneven display correction method according to claim 2, characterized in that the unit area corresponding to the highest brightness is determined as a reference unit area in the brightness measured in the b step, and

the uneven display correction method includes a fourth step of allocating the number of input video signal levels to the number of gradation levels in which a correction parameter maximum value is subtracted from the whole number of gradation levels while the correction parameter determined in the d step is set at the correction parameter maximum value for the unit area corresponding to the lowest brightness in the brightness measured in the b step, and the second step is performed after the fourth step.

12. An uneven display correction method according to claim 1, characterized in that the first step includes:

a step of determining an adjustment value for adjusting a black reference voltage such that the light-emission start gradation level of the reference area becomes a zero level except that the light-emission start gradation level is the zero level; and

a step of previously determining a value as the correction parameter in each unit area after the light-emission start gradation level of the unit area is substituted for the light-emission start gradation level of the unit area of the post-black reference voltage adjustment, the value corresponding to the difference between the light-emission start gradation level of the unit area and the light-emission start gradation level of the reference area.

13. An uneven display correction method according to claim 12, characterized in that the first step includes:

an e step of dividing a display area of a display panel into a plurality

of unit areas;

an f step of measuring brightness of each unit area in two predetermined gradation levels different from each other;

a g step of determining a light-emission efficiency characteristic in an arbitrary unit area;

an h step of setting one arbitrary unit area in the unit areas at a reference area, the h step determining an adjustment value for adjusting the black reference voltage such that the light-emission start gradation level of the reference area becomes a zero level based on two values of the brightness and the light-emission efficiency characteristic, the two values of the brightness being measured in two gradation levels previously determined with respect the reference area in the f step, the light-emission efficiency characteristic being determined in the g step; and

an i step of computing a value as the correction parameter in each unit area based on the brightness measured in each unit area in the f step, the light-emission efficiency characteristic determined in the g step, and the adjustment value determined in the h step, the value corresponding to the difference between the light-emission start gradation level of the unit area and the light-emission start gradation level of the reference area.

14. An uneven display correction method according to claim 13, characterized in that the unit area corresponding to the highest brightness is determined as a reference unit area in the brightness measured in the f step, and

the uneven display correction method includes a fifth step of

allocating the number of input video signal levels to the number of gradation levels in which a correction parameter maximum value is subtracted from the whole number of gradation levels while the correction parameter determined in the i step is set at the correction parameter maximum value for the unit area corresponding to the lowest brightness in the brightness measured in the f step, and the second step is performed after the fifth step.

15. An uneven display correction method, characterized by including:

a first step of dividing a display area of a display panel into a plurality of unit areas, the first step setting one arbitrary unit area among the unit areas at a reference area, the first step previously determining a correction parameter for approximately calculating a difference in input video signal for the same brightness between a light-emission efficiency characteristic for each input video signal level in the unit area and the light-emission efficiency characteristic for each input video signal level in the reference area in each unit area, with the use of the input video signal level as a variable; and

a second step of correcting an input video signal based on the correction parameter determined in each unit area.

16. An uneven display correction method according to claim 15, characterized in that the first step includes:

an a step of dividing a display area of a display panel into a plurality of unit areas;

a b step of measuring brightness of each unit area in a first predetermined gradation level;

a c step of measuring brightness of each unit area in a second predetermined gradation level;

a d step of determining a light-emission efficiency characteristic in an arbitrary unit area;

an e step of computing the difference in input video signal for the same brightness between the light-emission efficiency characteristic for each input video signal level in the unit area and the light-emission efficiency characteristic for each input video signal level in the reference area at the first gradation level in each unit area by setting one arbitrary unit area among the unit areas at a reference area based on the brightness measured in each unit area in the b step and the light-emission efficiency characteristic determined in the d step;

an f step of computing the difference in input video signal for the same brightness between the light-emission efficiency characteristic for each input video signal level in the unit area and the light-emission efficiency characteristic for each input video signal level in the reference area at the second gradation level in each unit area by setting one arbitrary unit area among the unit areas at a reference area based on the brightness measured in each unit area in the c step and the light-emission efficiency characteristic determined in the d step; and

a g step of determining the correction parameter based on the difference determined in each unit area in the e step and the difference determined in each unit area in the f step.

17. An uneven display correction method according to claims 15 or 16, characterized in that the correction parameters are α and β given by the following formula:

$$Vth = (\alpha \times Yin/Ymax)+\beta,$$

where

Yin: input video signal level,

Ymax: maximum value of signal level in scope of input video signal, and

Vth: approximate value of difference in input video signal for the same brightness between light-emission brightness characteristics for each input video signal level in a certain unit area and for each input video signal level in reference area when input video signal level exists at Yin.